

CLAIMS

We claim:

1. A modular orthopaedic implant system comprising:
a first component having an articulating surface and an interior surface defining a
5 tapered bore and an exterior surface spaced from the articulating surface, at least a
portion of the exterior surface surrounding the tapered bore, the portion of the exterior
surface surrounding the tapered bore being asymmetrical in at least one cross-section; and
a tapered metaphyseal component mountable to the distal femoral component.
2. The modular orthopaedic implant system of claim 1 wherein the first component
10 comprises a distal femoral component that is sized and shaped to replace more than the
distal 3 cm. of the native femur.
3. The modular orthopaedic implant system of claim 1 further comprising a plurality
of orthopaedic components having tapered bores sized and shaped to be received in and
frictionally lock with the tapered bore of the first component.
- 15 4. The modular orthopaedic implant system of claim 3 wherein at least one of the
plurality of orthopaedic components comprises a segment sized and shaped to replace a
portion of the shaft of a long bone.

5. The modular orthopaedic implant system of claim 1 wherein the tapered metaphyseal component includes a tapered post sized and shaped to be receivable within the tapered bore of the first component and to create a frictional lock between the first component and the tapered metaphyseal component.

5 6. The modular orthopaedic implant system of claim 1 wherein the tapered metaphyseal component has an interior surface defining a distal tapered bore, the system further comprising an adapter for connecting the tapered metaphyseal component to the first component, the adapter having a tapered post sized and shaped to be receivable within the tapered bore of the first component and to create a frictional lock between the
10 first component and the adapter, the adapter further comprising a tapered post sized and shaped to be receivable within the tapered bore of the tapered metaphyseal component and to create a frictional lock between the adapter and the tapered metaphyseal component.

7. The modular orthopaedic implant system of claim 6 wherein the two tapered posts
15 of the adapter are different from each other in size or shape.

8. The modular orthopaedic implant system of claim 1 wherein the tapered metaphyseal component has an interior surface defining an opening, the system further comprising:

a first stem extension having a distal end and a proximal end, the distal end being shaped and sized to be received in and mate with the opening of the tapered metaphyseal component;

5 a second stem extension having a distal end and a proximal end, the distal end of the second femoral stem extension being different from the distal end of the first femoral stem extension shape in size or shape;

an adapter for connecting the second femoral stem extension to the tapered metaphyseal component, the adapter having an end sized and shaped to be received in and mate with the opening of the tapered metaphyseal component, and the adapter
10 opposite end having an opening sized and shaped to receive and mate with the distal end of the second femoral stem extension.

9. The modular orthopaedic implant system of claim 8 wherein the distal end of the second stem extension is threaded.

10. An orthopaedic implant system comprising:
15 a first orthopaedic component; and
a metaphyseal component mountable to the first orthopaedic component;
wherein the metaphyseal component has a wide end, a narrow end, an overall length between the wide end and narrow end, and a tapered outer surface;

wherein the tapered outer surface of the metaphyseal component includes a plurality of steps and is porous over a majority of the overall length of the metaphyseal component.

11. The orthopaedic implant system of claim 10 wherein the tapered outer surface of
5 the metaphyseal component is porous over at least 75% of its overall length.
12. The orthopaedic implant system of claim 10 wherein the tapered outer surface of the metaphyseal component is smooth at the narrow end.
13. The orthopaedic implant system of claim 10 wherein the entire tapered outer surface of the metaphyseal component is porous.
- 10 14. The orthopaedic implant system of claim 13 wherein the metaphyseal component has a distal surface that is non-porous and a proximal surface that is non-porous.
15. The orthopaedic implant system of claim 10 wherein the metaphyseal component has an average of at least five steps per inch of overall length of the metaphyseal component.
- 15 16. The orthopaedic implant system of claim 10 wherein the outer surface of the metaphyseal component has at least 10 steps.

17. The orthopaedic implant system of claim 16 wherein the outer surface of the metaphyseal component has at least 15 steps.

18. The orthopaedic implant system of claim 17 wherein the outer surface of the metaphyseal component has at least 19 steps.

5 19. The orthopaedic implant system of claim 10 further comprising a plurality of orthopaedic components.

20. An orthopaedic knee implant system comprising:
a distal femoral component having an articulating surface and a non-articulating surface; and

10 a metaphyseal component mountable to the non-articulating surface of the distal femoral component;

wherein the metaphyseal component has a wide end, a narrow end, an overall length between the wide end and narrow end, and a tapered outer surface;

15 wherein the tapered outer surface of the metaphyseal component includes at least five steps per inch of the overall length of the metaphyseal component.

21. The orthopaedic implant system of claim 20 wherein the system further comprising a stem extension

22. An orthopaedic knee implant system comprising:

a distal femoral component having an articulating surface and a non-articulating surface; and

a metaphyseal component mountable to the non-articulating surface of the distal

5 femoral component;

wherein the metaphyseal component has a wide end, a narrow end, an overall length between the wide end and narrow end, and a tapered outer surface;

wherein the tapered outer surface of the metaphyseal component includes a plurality of adjacent steps extending from the wide end to the narrow end, each step being

10 spaced from the adjacent step by a distance of less than 0.2 inches.

23. The orthopaedic implant system of claim 22 wherein each step is spaced from the adjacent step by a distance of about 0.12-0.16 inches.

24. An orthopaedic implant system comprising:

a first implantable component having an articulating surface to replace a portion

15 of a patient's bone;

a second implantable component;

the first implantable component having a tapered bore;

the second implantable component having a tapered bore differing from the tapered bore of the first implantable component in at least one characteristic;

an adapter for connecting the first implantable component to the second implantable component, the adapter including two tapered posts, one of said tapered posts being sized and shaped to be received in and frictionally lock with the tapered bore of the first implantable component and the other of said tapered posts being sized and shaped to be received in and frictionally lock with the tapered bore of the second implantable component.

25. The system of claim 24 wherein the first implantable component comprises a distal femoral component and the second implantable component comprises a tapered metaphyseal component.

10 26. The system of claim 25 further comprising an implantable segment sized and shaped to replace a diaphyseal portion of a long bone, the implantable segment having a tapered post sized and shaped to be received in and frictionally lock with the tapered bore of the distal femoral component.

27. A modular orthopaedic knee implant system comprising:
15 a distal femoral component having a distal articulating surface;
a tapered metaphyseal component having a distal end and a proximal end with an opening at the proximal end, the tapered metaphyseal component being mountable to the distal femoral component;

a first femoral stem extension having a distal end and a proximal end, the distal end being shaped and sized to be received in and mate with the opening at the proximal end of the tapered metaphyseal component;

5 a second femoral stem extension having a distal end and a proximal end, the distal end of the second femoral stem extension being different from the distal end of the first femoral stem extension in size or shape;

10 an adapter for connecting the second femoral stem extension to the tapered metaphyseal component, the adapter having a proximal end and a distal end, the adapter distal end being sized and shaped to be received in and mate with the opening at the proximal end of the tapered metaphyseal component, and the adapter proximal end having an opening sized and shaped to receive and mate with the distal end of the second femoral stem extension.

28. The modular orthopaedic knee implant system of claim 27 wherein the opening at the adapter proximal end is threaded.

15 29. The modular orthopaedic knee implant system of claim 27 wherein the distal end of the adapter comprises a post.

30. An orthopaedic knee implant kit comprising:

a first distal femoral component having a distal articulating surface and a post;

a second distal femoral component having a distal articulating surface and a proximal end and with a bore at the proximal end;

a tapered metaphyseal component having a proximal end and a distal end and having an interior surface defining a bore at the distal end, the bore of the tapered
5 metaphyseal component being shaped and sized to receive a portion of the post of the first distal femoral component for mounting the tapered metaphyseal component on the first distal femoral component;

an adapter having a distal end comprising a post shaped and sized to be received in the bore at the proximal end of the second femoral component, the adapter having a
10 proximal end comprising a post shaped and sized to be received in the bore at the distal end of the tapered metaphyseal component;

wherein the tapered metaphyseal component may be selectively used with the first distal femoral component and the second distal femoral component.

31. The orthopaedic knee implant kit of claim 30 wherein the proximal end of the
15 tapered metaphyseal component has an interior surface defining a bore, the kit further comprising a second adapter having a proximal end and a distal end, the distal end of the second adapter having an outer surface shaped to define a post receivable and frictionally engageable with the bore at the proximal end of the tapered metaphyseal component.

32. The orthopaedic knee implant kit of claim 31 further comprising a first stem
20 extension having a proximal end and a distal end, wherein the distal end of the first stem

extension has an outer surface defining a post sized and shaped to be receivable and frictionally engageable with the bore at the proximal end of the tapered metaphyseal component.

33. The orthopaedic knee implant kit of claim 32 further comprising a second stem
5 extension having a proximal end and a distal end, wherein the distal end of the second stem extension differs from the distal end of the first stem extension in size or shape.

34. The orthopaedic knee implant kit of claim 33 wherein the distal end of the second stem extension is threaded and the proximal end of the second adapter is threaded.